PRICKLY-PEARS.

BY GRANT ALLEN.

I AM sitting on a great white Algerian rock; in the foreground a tiny mosque with a snowy dome; behind it a tall, green, prickly hedge that masks the huts of a straggling Kabyle village. How strange that here on this arid African hillside an American cactus, the common prickly-pear plant, should grow on the bare and unsmitten rock, to form this hedge, as readily as it grows in its native Mexican desert. It is merely, like myself, a naturalized alien on this side the Atlantic, to be sure; for the cactuses are all true American citizens by birth and training, wholly peculiar to the western hemisphere, where they were first developed, and none of them are found truly indigenous in any part of the old world. But Africa suits the cactus tribe, for all that, down to the very ground; and here on the confines of the burning Sahara itself the prickly-pear basks on the hot soil like a genuine native, to the manner born. It has adopted Algeria. The thrifty colonists introduced it first on their dry hillsides, because it will grow where nothing else can thrive upon the bare rock; and cut up into blocks to disguise its prickles, it forms excellent fodder for the undiscriminating palate of the North African cow. But once introduced, it took care of itself, and now it often spreads a great deal faster than the thrifty colonists aforesaid either wished or imagined.

The cactuses are very peculiar plants—as peculiar structurally as they are bizarre and grotesque in outer appearance. They have spared no pains and shrunk from no sacrifice in accommodating themselves thoroughly to their niche in nature. In the first place, they have no true leaves. What look like leaves in certain jointed cactuses are really flattened and expanded stems. If this seems at first hearing a hard saying, the analogy of the common stone-

crops, where stem and leaf are hardly distinguishable, will help to make it a little less incredible. In other ways, too, the stone-crops (or sedums, as gardeners call them) throw much light upon the nature of the cactuses. All these rock-haunting or desert plants naturally get very little water, except at long intervals after occasional showers. Hence only those can survive which form themselves, as it were, into living reservoirs to retain all the moisture they once absorb. As soon as the rain falls in their arid haunts, the roots and rootlets eagerly drink it up in a great hurry, and store it away at once in the soft and spongy cellular tissue of which the main part of the plant is wholly formed. For this purpose, both in stone-crops and cactuses, the stems have become fleshy and succulent, and, being also green and leaf-like, they closely resemble true leaves. But they are covered externally with a thick skin, which resists evaporation and keeps the moisture, once collected, at the plant's disposal for an unlimited period. In short, the cactus does as a plant just what the camel does as an animal.

It is obvious that plants thus situated would dry up and shrivel under the sun's heat in a very short time if they had thin leaves of the ordinary type, provided with numerous pores and open spiracles. Hence it almost always happens that sandy or desert species have thick, succulent stems, as we see not only in the stone-crops and house-leeks, but also in the glassworts and other fleshy plants so commonly found on dry sea beaches. And so necessary is this result that in the deserts of India, where true cactuses are quite unknown, several kinds of spurges have assumed precisely the same outer shape, and, having got rid of their true leaves, have developed jointed succulent stems exactly mimicking those of the genuine cactus. Old Anglo-Indians know them by that name alone, and pooh-pooh science when it tries to tell them their cactuses are only euphorbias in disguise.

In both cases, however, the leaves, though greatly reduced, have not entirely or irretrievably disappeared. They, or their representatives, still survive in the prickly spines with which the joints of the cactus are so plentifully sprinkled. In order to understand this further transformation, we have only to think first of the needs of the cactus plant, and then of the analogies of the stone-crops and house-leeks. Desert vegetation is exposed to exceptional and peculiar dangers. Just in proportion as there is

little in the way of greenstuff about to eat does the hungry herbivore greatly desire to eat it. Hence only those plants were likely to survive in the struggle for existence which rendered themselves peculiarly unpleasant to the assaulting enemy. In the cactus the leaves have, accordingly, assumed the form of sharp prickles, which in the particular species that bears the prickly-pear are arranged on the leaf-like stem in a regular quincunx or five-starred pattern. How so strange a transformation comes about is readily shown in the house-leeks and echeverias of our garden bowers, in which each leaf of the rosette ends in a sharp thorn; or, still better, in the glassworts of the seaside, which seems like stone-crops whose fleshy leaves have converted themselves by sharpening into regular prickles.

But as the cactuses have got rid of leaves, the stem has to do the work of the foliage. For this purpose it has become green and leaf-like, and it performs all the common foliar functions—that is to say, it eats for the plant, absorbing carbon from the floating carbonic acid of the air, and assimilating it in its tissues with the aid of sunlight. Thus the young and tender stems are quite leaf-like; but as they grow old they gradually assume the appearance of a trunk, partially lose their jointed look, and acquire bark of a hard, dry, brown, and tree-like character.

Cactuses have a wonderful knack of reproducing themselves under the most adverse conditions. If you take a cutlass and hack a cactus plant into little bits (as I have often seen a negro do in Jamaica to clear the soil), each tiny fragment that falls upon the ground will grow in time into a separate cactus bush. At first sight this seems a very marvellous and exceptional power, for sometimes the new plant grows from a most insignificant and unnoticeable scrap of the parent stem; and, indeed, in North Africa the regular way of planting a prickly-pear hedge is to chop an old cactus into tiny bits, and then lay them along in a shallow trench just traced to receive them, where they straightway grow into big bristly fences. But when one comes to look a little closer at the matter, the apparent anomaly disappears at once. For, in fact, what one plants is a cutting from the stem, and there is nothing more remarkable in such a cutting taking root and thriving than in slips from a rosebush or an apple-tree growing when stuck in the ground. The fact is, every part of every plant has in it the inherent power of reproducing an entire

organism, as a crystal reproduces itself in a proper solution. Sometimes even a bit of a leaf will do, as everybody who has cultivated a rock garden must have noticed in the case of sedums, mere scraps of which often root and grow wherever they happen to fall by accident. Again, in a potato, we similarly cut out a piece of the tuber with an eye—that is to say, an undeveloped bud—in it, and are not at all surprised that it grows at once into a new potato-vine. Even seeds and bulbils (like those of the tiger-lily) are, in essence, merely specialized buds that fall from the mother-plant so as to start in life on their own account elsewhere.

All that is peculiar to the cactus, then, is this: that, being a dry desert creature, it is necessarily endowed with great vitality; and portions of it will accordingly root and thrive under circumstances where any less hardy species would dry up and wither for want of moisture.

It will now, I suppose, be quite obvious to everybody why the cactus flower seems to grow out of the end of a leaf—a peculiarity specially noticeable in the pretty pink and purple epiphyllums so commonly cultivated in small conservatories. In reality, it grows exactly where one would expect it—at the end of a stem; only the stem has been flattened out so much as to deceive the eye by looking thoroughly leaf-like. In the prickly-pear the flowers are pale yellow, and, though large, can hardly be considered handsome. They grow quite flat on the edge of the seeming leaves, in a squat and somewhat undignified attitude. So far as I have observed (but my opportunities for watching them have not been great), they appear to be mainly fertilized by various night-flying moths with a long proboscis, which come out at dusk; and for this reason, like so many other night-fertilized flowers, they are pale yellow. The well-known and lovely night-flowering cereus, a sister-cactus, which is still more thoroughly nocturnal in its ways (so much so that it lasts but for a single evening), is pure white, to catch the eyes of the moths in the tropical moonlight, and it further attracts them by its strong and almost overpowering perfume, which closely resembles that of tuberose, stephanotis, jasmine, and many other white night-blooming flowers. In the prickly-pear, however, the scent is very faint, and is only perceptible to any extent in the gray of the evening. The moths visit it, of course, for the sake of honey, and, thrusting their proboscis into its tubular depths, unconsciously carry the fertilizing

pollen from flower to flower, as they flit from one plant to another in succession.

The fruit itself—the prickly-pear so familiar in all European and American markets—follows in due course from the fertilized blossom. It is a clumsy reddish and yellowish thing, covered, like the plant itself, with those bunches of sharp hairs which have gained it its common English name. The hairs are there, no doubt, to deter unauthorized and useless intruders; the skin protects it from insect foes and small birds; the pulp allures the monkeys, toucans, and other proper dispensers of the seed or kernel; and the grains dispersed through its fleshy part are either thrown away by the animal, or, if swallowed, are not digested, owing to their tough and stony covering. We thus see in this singular cactus a most perfect adaptation in every part to the circumstances of the arid and rocky soil on which it springs. So perfect is the adaptation, indeed, that the prickly-pear has long since travelled to every similar country of the civilized or semi-civilized world, and is now almost as common in the Barbary States and on the Mediterranean shore as on its own native Mexican deserts. It is easy enough to make it grow: the real difficulty, as the small cultivators of the Riviera are beginning to find out, is, once it gets in, ever to get rid of it.

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